

D21F

PAPER-MAKING MACHINES; METHODS OF PRODUCING PAPER THEREON

Definition statement

This subclass/group covers:

Methods and devices in the wet end, press section and drying section of a papermaking machine, embossing paper, forming discontinuous sheets of paper.

References relevant to classification in this subclass

This subclass/group does not cover:

Calendering paper webs	D21G
Coating paper webs	D21H

Informative references

Attention is drawn to the following places, which may be of interest for search:

Handling webs in general	B65H
Articles for writing or drawing upon	B43L
Making paper articles	B31D
Making textile fabrics from fibers or filamentary material in general	D04H
Marking, inspecting, seaming or severing textile materials in general	D06H
Systems for controlling or regulating non-electric variables	G05D

Special rules of classification within this subclass

Subgroups and main groups.

If a document concerns embodiments which are covered by several subgroups dependent on a higher hierarchy group, the following rules apply:

- the specific technical information relevant for some of the subgroups is classified in all said subgroups, for example a fiber rearranging device located in the nozzle of a headbox is classified in [D21F 1/0018](#) and [D21F 1/028](#);
- if relevant, the structural association (e.g. the combination) of the elements covered by the subgroups is classified in the head group;
- analogously, if generic technical information common to all of the subgroups is disclosed and only schematic embodiments of the specific subgroup embodiments are represented, the documents is classified in the head group only.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

In this subclass, the following terms are used with the meaning indicated:

Section	portion of a paper production machine effecting a certain process step, for example forming, pressing, drying, calendering, coating, etc.
Yankee	steam heated drying cylinder of large diameter, mainly used for the production of creped tissue paper
TAD	through air drying process, drying paper webs by passing streams of air therethrough

D21F 1/00

Wet end of machines for making continuous webs of paper

Definition statement

This subclass/group covers:

Wet end of papermaking machines, starting at the stable section, ending at the transfer/pick up to press section

D21F 1/0009

[N: Regulating the freeness of the pulp]

Definition statement

This subclass/group covers:

Controlling and regulating drainage rate, fiber length or degree of refining of a paper pulp suspension.

D21F 1/0018

[N: Devices for dispensing fibres in a fluid]

Definition statement

This subclass/group covers:

Devices or altering the distribution of the fibers in the suspension, like for example by pressure pulse or ultrasound, the suspension flowing through the headbox of a papermaking machine.

D21F 1/0027

[N: Screen-cloths]

Definition statement

This subclass/group covers:

Screens or fabrics made from plastic materials and useable for forming paper webs in a paper machine by separating fibers from an aqueous suspension or also if usable for drying a paper web in the drying section of a paper machine.

D21F 1/0045

[N: Triple layer fabrics]

Definition statement

This subclass/group covers:

Fabrics comprising two separate layers (paper side layer and machine side layer) and a system of binding yarns interconnecting said layers, the binding yarns can also contribute to the forming of the paper side layer (known as sheet support binding (SSB)).

References relevant to classification in this subclass

This subclass/group does not cover:

Paper making felts	D21F 7/08
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Heat treatment of fabrics	D04H
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D21F 1/009

[N: Fibre-rearranging devices]

Definition statement

This subclass/group covers:

Devices for altering the distribution of the fibers in the suspension, like for example by pressure pulse or ultrasound, the suspension being already spread on the forming screen.

D21F 1/02

Head boxes of Fourdrinier machines

Definition statement

This subclass/group covers:

Head boxes for all kind of paper machines (i.e. Fourdrinier, gapformer, twin- or hybrid-former) if not particularly suitable only for cylinder machines, in which case [D21F 1/04](#) is appropriate.

References relevant to classification in this subclass

This subclass/group does not cover:

Headboxes of paper machines suitable only for cylinder machines	D21F 1/04
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Valves in general	F16K
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D21F 1/022

[N: Means for injecting material into flow within the headbox]

Definition statement

This subclass/group covers:

Devices for injecting additional dilution water, dilution suspension or chemicals into a pulp flow within the headbox.

D21F 1/06

Regulating pulp flow

Definition statement

This subclass/group covers:

Regulating the pulp flow into and out of the headbox.

D21F 1/08

Regulating consistency

Definition statement

This subclass/group covers:

Dilution devices before or in the headbox.

D21F 1/10

Wire-cloths (production of wire-cloths B21F)

Definition statement

This subclass/group covers:

Forming or drying wires only if made from metallic materials.

D21F 1/18

Shaking apparatus for wire-cloths and associated parts

Definition statement

This subclass/group covers:

Shaking apparatus for wire and screen cloths, including ultrasound principles.

D21F 1/20

in fourdrinier machines

Definition statement

This subclass/group covers:

Shaking apparatus in all type of Fourdrinier, gapformer, twinformer or hybridformer machines.

D21F 1/22

in cylinder machines

Definition statement

This subclass/group covers:

Shaking apparatus specially adapted for being used in a cylinder machine.

D21F 1/24

Tilting, raising, or lowering mechanisms for wire-cloths

Definition statement

This subclass/group covers:

Tilting, raising or lowering mechanisms for wire and screen cloths.

D21F 1/26

in Fourdrinier machines

Definition statement

This subclass/group covers:

Tilting, raising or lowering mechanisms in all type of Fourdrinier, gapformer, twinformer or hybridformer machines.

D21F 1/28

in cylinder machines

Definition statement

This subclass/group covers:

Tilting, raising or lowering mechanisms specially adapted for being used in a cylinder machine.

D21F 1/30

Protecting wire-cloths from mechanical damage

Definition statement

This subclass/group covers:

Protecting wire and screen cloths from mechanical damage and contamination, coatings and impregnation agents.

D21F 1/32

Washing wire-cloths or felts

Definition statement

This subclass/group covers:

Washing wire or screen cloths or felts.

D21F 1/36

Guiding mechanisms (suction rolls D21F3/10)

Definition statement

This subclass/group covers:

Wire or screen guiding mechanisms including air border layer seals, air cushion devices, guide rolls, stretching rolls, spreading rolls for the wire or screen.

References relevant to classification in this subclass

This subclass/group does not cover:

Controlled deflection rolls	D21G 1/0206
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Registering, tensioning, smoothing or guiding webs	B65H 23/00
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D21F 1/44

Watermarking devices

Definition statement

This subclass/group covers:

Watermarking in general, watermarking devices acting on the fibrous suspension or layer while on the forming screen or wire; producing special forming wires or screens for making watermarks; separate watermark elements.

D21F 1/48

Suction apparatus (suction rolls D21F3/10)

Definition statement

This subclass/group covers:

Suction apparatus in general, including regulation, steam application by suction, removing water, suction on both sides of the screen or wire, dewatering by change of direction or centrifugal effect.

D21F 1/56

Deckle frame arrangements

Definition statement

This subclass/group covers:

Sheet edge limiting devices; devices for setting the width of the web.

D21F 1/66

Pulp catching, de-watering, or recovering; Re-use of pulp-water

Definition statement

This subclass/group covers:

Treatment of white waters or broke, devices and processes in the short circulation of paper machines.

D21F 1/70

by flotation

Definition statement

This subclass/group covers:

Pulp catching, de-watering, recovering or re-use of pulp-water by flotation.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flotation in general	B03D
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D21F 2/00

**Transferring webs from wet ends to press sections [N:
(handling webs in general B65H)]**

Definition statement

This subclass/group covers:

Transferring webs between paper machine sections in general, not only from the wet end to the press section.

References relevant to classification in this subclass

This subclass/group does not cover:

Transfer belts, bands, felts or fabrics	D21F 7/086
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D21F 3/00

**Press section of machines for making continuous webs of
paper**

D21F 3/0227

[N: Belts or sleeves therefor]

Definition statement

This subclass/group covers:

Press shells, jackets, covers.

D21F 3/04

Arrangements thereof

Definition statement

This subclass/group covers:

Combinations of individual press elements forming a press section or part of such a section.

D21F 3/08

Pressure rolls

Definition statement

This subclass/group covers:
Web treatment rolls for press section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rolls, drums, discs or the like	F16C 13/00
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D21F 3/10

Suction rolls, e.g. couch rolls

Definition statement

This subclass/group covers:
Suction rolls for forming, pressing and drying sections.

D21F 5/00

Dryer section of machines for making continuous webs of paper

D21F 5/004

[N: Drying webs by contact with heated surfaces or materials]

Definition statement

This subclass/group covers:
Contact drying using anything except for rolls.

D21F 5/02

Drying on cylinders

Definition statement

This subclass/group covers:

Drying webs on heated cylinders.

References relevant to classification in this group

This subclass/group does not cover:

Drying webs by hot air on a Yankee dryer	D21F 5/181
Drying webs by hot air through perforated cylinders	D21F 5/182

D21F 5/021

[N: Construction of the cylinders]

Definition statement

This subclass/group covers:

Construction of the cylinders

Informative references

Attention is drawn to the following places, which may be of interest for search:

Details of heat-exchange rotary drums or rollers in general	F28F 5/02
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D21F 5/042

[N: in combination with suction or blowing devices]

Definition statement

This subclass/group covers:

Drying sections including suction or blowing devices, for example including a single-tier drying group.

D21F 5/12

Festoon drying

Definition statement

This subclass/group covers:

Drying paper webs on loops formed by a series of rods, e.g. GB 820910

D21F 5/18

Drying webs by hot air

Definition statement

This subclass/group covers:
Drying paper webs by hot air.

References relevant to classification in this group

This subclass/group does not cover:

Blow-on drying, impingement on cylinders	D21F 5/044
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D21F 7/00

Other details of machines for making continuous webs of paper

D21F 7/008

[N: Steam showers]

Definition statement

This subclass/group covers:
Steam blow boxes arranged in the paper machine.

References relevant to classification in this group

This subclass/group does not cover:

Web conditioning devices in calenders	D21G 1/0093
Damping devices	D21G 7/00

D21F 7/086

[N: Substantially impermeable for transferring fibrous webs]

Definition statement

This subclass/group covers:
Transfer belts, bands, felts or fabrics.

D21F 9/00

Complete machines for making continuous webs of paper

Definition statement

This subclass/group covers:
Complete machines (i.e. at least two sections combined) for making paper or for producing air-layed webs.

References relevant to classification in this group

This subclass/group does not cover:

Complete machines (i.e. at least two sections combined) comprising a coating section combined with any other section	D21G 9/009
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D21F 9/006

[N: paper or board consisting of two or more layers]

References relevant to classification in this group

This subclass/group does not cover:

Machines and processes for making tissue papers	D21F 11/14
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D21F 11/00

Processes for making continuous lengths of paper, or of cardboard, or of wet web for fibre board production, on paper-making machine

D21F 11/006

[N: Making patterned paper]

Definition statement

This subclass/group covers:
Methods for making patterned paper.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Crêping	B31F 1/12
Embossing	B31F 1/07
Details of the base fabric of imprinting, embossing, texturing belts	D21F 1/0027
Patterned paper	D21H 27/02

D21F 11/04

paper or board consisting of two or more layers

References relevant to classification in this group

This subclass/group does not cover:

Machines and processes for making tissue papers	D21F 11/14
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D21F 11/14

Making cellulose wadding, filter or blotting paper

Definition statement

This subclass/group covers:
Machines and processes specially adapted for forming tissue papers.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Embossing	B31F 1/07
Crêping	B31F 1/12

D21F 13/00

Making discontinuous sheets of paper, pulpboard or cardboard, or of wet web, for fibreboard production (making discontinuous sheets of board in moulds D21J; drying paper, pulpboard, or cardboard, in discontinuous sheet form F26B)

D21F 13/02

Making hand-made paper

Definition statement

This subclass/group covers:

Making hand-made paper, restoration of paper.